

with European birds, proved to be of that form. If, however, we do not recognize *Gavia arctica suschkini* as distinct, then the European bird is entitled to a place in our avifauna only on the strength of its casual occurrence in Alaska.

AN IMPROVED OBSERVATION TENT.

BY R. M. STRONG.

Plate X.

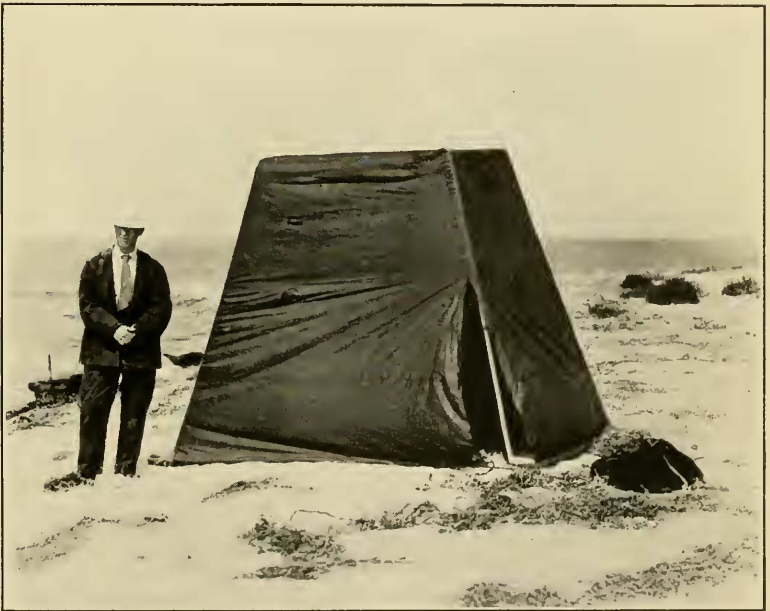
IN a preceding number¹ of this journal, I described with an illustration, a tent which I had used in studying gulls at their breeding places. This tent was a modification of a type described by Sawyer.² It is inexpensive and free from certain objectionable features of other bird blinds. However, it is small and low. Being only four feet high, one is not able to stand erect in it, and there is not sufficient space to handle apparatus comfortably. In the same communication, I stated that I had devised and used a larger tent since doing the work there described. It has occurred to me that an account of the improvements might be useful to some readers of this journal.

Tents of this type have no stay lines to interrupt the camera view, and they can be set up on rocky sites where it is not practicable to drive tent stakes. Furthermore, they are of very convenient shape, and are economical of ground space.

The contour of the tent is maintained by a frame which gives a flat horizontal roof and steep, slightly-sloping sides. The frame consists of eight poles held in position by four socket pieces at the corners of the roof and four anchoring poles to be described later. In the older tent, the frame poles were held together by blocks of

¹ Strong, R. M. On the Habits and Behavior of the Herring Gull, *Larus argentatus* Pont. The Auk, Vol. XXXI, Nos. 1-2, January-April, 1914. Plates III-X and XIX-XX, 1 text figure.

² Sawyer, E. J. A Special Bird-Blind. Bird Lore, Vol. XI, no. 2, March-April, 1909, pp. 71-73. One page of text figures.



1. CORNER BRACKET OF BRASS TUBING.
2. TENT IN POSITION, MUSKEGET ISLAND, AUG. 7, 1913.

wood in which holes were bored on three sides for the end, side, and upright poles. It has been my experience that these blocks are very unsatisfactory. Wear and shrinkage at the sockets make the fitting insecure, and a very small amount of looseness allows a large amount of sagging of the whole tent to leeward in a breeze. Furthermore, the blocks must be relatively large and clumsy to stand the strain put upon them, and they make a smooth fit of the cloth impossible. I found it necessary to brace the leeward side with sticks or boards which of course interfere seriously with the view and are often blown down by a strong wind.

I have been unable to get satisfactory poles for the tent frame in the vicinity of the places where I have used the tents. Furthermore, it requires more time to prepare poles properly than I have wished to spare after reaching a place for work. Since my first day in the field with a tent, I have always taken poles with me carefully prepared in advance.

In place of the clumsy wooden blocks, I had some brass corner pieces constructed. These consist of three short tubes brazed together (see Fig. 1), and lacquered black. These tubes have an inside diameter of 22 mm., and each is about 70 mm. long. One of these receives the end roof pole, another a side roof pole, and the third an upright supporting pole. The roof poles each make an angle of 103 degrees with the upright supporting pole. The angle of the two horizontal poles is of course 90 degrees. In place of the heavy hardwood, I have substituted bamboo poles. These are prepared from ordinary bamboo fish poles, selecting portions of suitable diameter. Brass ferrules were fitted on the ends of each roof pole and on the upper ends of each upright pole. These are necessary for a firm joint and were prepared at a hardware shop. A portion of such a ferrule projecting from a socket, appears in Fig. 1, at the right.

The tent proper was made from the same material used in my smaller tent, i. e. dark-green cambric or lining cloth which was purchased at 6 cts. a yard. About thirty yards 26 inches wide were used. I cut the cloth, pinning the sections together for the seamstress. The roof is in one section, which spreads slightly over the sides and ends of the tent. The angles were determined on cross section paper, and the material was cut into strips, three